

Version with Markings to Show Changes Made**In the Claims:**

Claims 2, 3, 9-15, 17, and 18 have been canceled.

Claims 1 and 4 have been amended as set forth below:

1. (Amended) A method of labeling individual mammalian chromosomes in interphase cells by *in situ* hybridization, comprising:

providing chromosome-specific labeled probes and competitor DNA;

combining the labeled probes and competitor DNA with mammalian chromosomes in interphase cells under hybridization conditions wherein the labeled probes hybridize specifically to the mammalian chromosomes, thereby labeling the mammalian chromosomes in interphase cells, wherein the labeled probes and the competitor DNA are DNA fragments are smaller than 500 nucleotides in length.

4. (Amended) The method of claim 1 3, wherein the labeled probes are selected from the group consisting of probes comprising total recombinant library DNA, probes comprising DNA inserts purified from a chromosome-derived recombinant DNA library, and probes comprising specific DNA fragments derived from chromosomes.